ABSTRACTS

EDITED BY ALBERT C. LEWIS

The purpose of this department is to give sufficient information about the subject matter of each publication to enable users to decide whether to read it. It is our intention to cover all books, articles, and other materials in the field.

Books for abstracting and eventual review should be sent to this department, with an extra copy sent directly to the editor of the Book Reviews Department if the publisher wishes to accelerate the process. Materials should be sent to Dr. Albert C. Lewis, Humanities Research Centre, Box 7219, Austin, TX 78712.

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The indexing terms (in captials) refer only to aspects of the publication of interest to historians of mathematics, including some topics in general history of science and historiography, but not other topics unless there is a fairly close link with mathematics or its history.

MR 46 #3255 *means that the item is numbered 3255 in volume 46 of* Mathematical Reviews. RZ 1973 #3A14 *means that the item is numbered 3A14 in the third number of the 1973 volume of the* Referativny Zhurnal. Z 50 4 *means volume 50, page 4 of the* Zentralblatt. Isis 102, 45 *means item 45 in the 102nd* Isis Critical Bibliography.

In order to facilitate reference and indexing, entries are given serial numbers which appear at the end following the symbol #. The serial numbers of books are underlined.

A name in parentheses at the end of an entry indicates the abstractor. In this issue there are abstracts by Albert C. Lewis, L. F. Meyers, and C. J. Tee.

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KNOBLOCH E 1980 Einfluss der Symbolik und des Formalismus auf die Entwicklung des mathematischen Denkens. Berichte zur Wissenschaftsgeschichte 3, 77-94 (English summary, p. 77). How various mathematicians from Euclid to Hilbert viewed the process of symbolization, as contributing to or detracting from understanding. Special discussion of the barycentric calculus of Möbius and the Ausdehnungslehre of Grassmann. (L. F. Meyers) #1817

LAM LAY-YONG 1980 The Chinese connection between the PASCAL TRIANGLE and the solution of numerical equations of any degree. HM 7, 407-424. (ACL) #1818

LAPTEV B L 1979 Mathematics in KAZAN UNIVERSITY over 175 years (1804-1979). (Russian.) Izv. Vyssˇ. Učebn. Zaved. Matematika No. 10, 3-13. (ACL) #1819.

LAPTEV B L, SHERSTNEV A N, KHUSNUTDINOV R Sh, & SHAIDUKOV K M 1978 Boris Mikhailovich GAGAEV (1897-1975). Matematicheskii Analiz. Kazan University Press. Pp. 5-14. (In Russian.) Scientific BIOGRAPHY with BIBLIOGRAPHY of 59 items. ORTHOGONAL FUNCTIONS. POLYHARMONIC FUNCTIONS. DIFFERENTIAL EQUATIONS. INTEGRAL EQUATIONS KAZAN UNIVERSITY. (L. F. Meyers) #1820

LEHTO O 1981 Rolf NEVANLINNA. Nordisk Matematisk Tidskrift 29, 1-6. (In Swedish. English summary on p. 47.) Summary of his work, especially on MEROMORPHIC FUNCTIONS and his contributions to mathematics in FINLAND. PORTRAIT. (Translated from a Finnish article in Arkhimedes 32 (1980), 134-138.) (L. F. Meyers) #1821

MACKENZIE DONALD A 1981 Statistics in Britain, 1865-1930: The Social Construction of Scientific Knowledge. Edinburgh: Edinburgh University Press. viii + 306 pp. $25.00. An examination of the relationship between STATISTICAL THEORY and British society in the period 1865-1930. (By "statistical theory" the author means "the construction of a theoretical frame work for the analysis of numerical data.") Intended primarily as a work in sociology of knowledge, it is directed at supporting the position that social influences can be identified which affect the "internal" content as well as the quality, organization, and direction of science. (ACL) #1822

MOORE GREGORY H & GARCIADIEGO ALEJANDRO 1981 BURALI-FORTI'S PARADOX: A reappraisal of its origins. HM 8, 319-350. (ACL) #1823

MUENZENMAYER HANS PETER 1979 Der CALCULUS SITUS und die Grundlagen der Geometrie bei LEIBNIZ. Studia Leibnitiana 11, 274-300. Leibniz' calculus situs was successful as a model in supporting his metaphysics but the calculus cannot be regarded as a forerunner of modern formal mathematical structures. H. G. GRASSMANN. (ACL) #1824

NEUBRUNN T 1981 Docent Ladislav MIŠÍK is sixty years old. Mathematica Slovaca 31, 217-220. (In Slovak.) BIOGRAPHY. Brief summary of work in REAL ANALYSIS, and BIBLIOGRAPHY of 44 items. PORTRAIT. (L. F. Meyers) #1825

NEUMANN OLAF 1979 Bemerkungen aus heutigen Sicht über Gauss' Beiträge zu Zahlentheorie, Algebra und Funktionentheorie. NTM Schriftenreihe für Geschichte Naturwissenschaften Technik und Medizin 16, 22-39. C. F. GAUSS. (ACL) #1826

NIEKUS N H, VAN RIEMSDIJK H, & TROELSTRA A S 1981 BIBLIOGRAPHY of A. HEYTING. Nieuw Archief voor Wiskunde (3) 29, 24-35. A list of 92 items, and PORTRAIT. (L. F. Meyers) #1827

ORE OYSTEIN 1979 NIELS HENRIK ABEL (1802-1829) (on the occasion of the 150th anniversity of his death). (Bulgarian.) Translated from the German by B. Penkov. B"lgarska Akademija na Naukite Fizičeski Institut Matematičeski Institut Fiziko-Matematičesko Spisanie 22 (55), 243-258. (ACL) #1828

PIER JEAN-PAUL 1980 Historique de la notion de compacité. HM 7, 425-443. COMPACTNESS of sets. (ACL) #1829

PINGREE DAVID 1981 Census of the Exact Sciences in Sanskrit. Ser. A, Vol. 4. Philadelphia: The American Philosophical Society. 447 pp. $30.00. (Memoirs of the American Philosophical Society, Vol. 146.) This addition brings the total number of authors treated in the Census to about 2450. This volume is primarily devoted to authors whose names begin with labials (p, ph, b, bh, and m). The first three volumes were reviewed in HM 4, 226-7. (ACL) #1830

PYCIOR HELENA M 1981 GEORGE PEACOCK and the British origins of SYMBOLICAL ALGEBRA. HM 8, 23-45. (ACL) #1831

RANG B & THOMAS W 1981 ZERMELO's discovery of the "RUSSELL PARADOX." HM 8, 15-22. (ACL) #1832

RASHED ROSHDI 1979 L'analyse diophantienne au X^{e} siècle: L'exemple d'al-Khāzin. Revue d'Histoire des Sciences 32, 193-222. (ACL) #1833

REES CHARLES S 1981 Egyptian fractions. Mathematical Chronicle 10, 13-30. ANCIENT EGYPTIAN FRACTIONS and modern work by J. J. SYLVESTER, P. ERDÖS, and others, inspired by that ancient arithmetic. (G. J. Tee) #1834

RICHARDS JOAN L 1980 The art and the science of BRITISH ALGEBRA: A study in the perception of mathematical truth. HM 7, 343-365. (ACL) #1835

ROSIŃSKA GRAŻYNA 1981 Tables trigonometriques de GIOVANNI BIANCHINI. HM 8, 46-55. (ACL) #1836

SCHOLZ ERHARD 1980 Geschichte des Mannigfaltigkeitsbegriffs von Riemann bis Poincaré. Boston/Basel/Stuttgart: Birkhäuser. 430 pp. Illustrated. $19.80. ISBN 3-7643-3023-6 A history of the THEORY OF MANIFOLDS from B. RIEMANN to H. POINCARÉ. Also included in the study are: E. BELTRAMI; H. v. HELMHOLTZ; F. KLEIN; H. GRASSMANN; C. JORDAN; A. CAYLEY; and L. E. J. BROUWER. (ACL) #1837

SHAPIN S 1981 Of gods and kings: Natural philosophy and politics in the Leibniz-Clarke disputes. Isis 72, 187-215. "From the late 1690s until about 1714 the stress was upon priority in the discovery of the calculus.... From about 1710 the disputes began to involve questions in natural philosophy, metaphysics, and religion. These issues reached their greatest prominence during 1715 and 1716, when Leibniz exchanged a series of letters with the Reverend Samuel Clarke." (L. F. Meyers) #1838

SIU MAN-KEUNG 1981 Pyramid, pile, and sum of squares. HM 8, 61-66. (ACL) #1839

SMITH G C 1980 THOMAS BAYES and fluxions. HM 7, 379-388. (ACL) #1840

STERN NANCY 1981 From ENIAC to UNIVAC: An Appraisal of the Eckert-Mauchly Computers. Bedford, Massachusetts: Digital Press. ix + 286 pp. Illustrated. ISBN 0-932376-14-2. (Digital Press History of Computing Series.) J. PRESPER ECKERT. JOHN W. MAUCHLY. Includes JOHN VON NEUMANN's first draft of a report on the EDVAC, 1945. (ACL) #1841

STREL'COVA G JA 1979 BLAISE PASCAL. (Russian.) Moscow: "Mysl." 239 pp. (ACL) #1842

STUHLHOFER F 1980 Strukturen der Wissenschaftlicher Betätigung und das zeitlich exponentielle Wachstum der neuzeitlichen Naturwissenschaft. Berichte zur Wissenschaftsgeschichte 3, 115-126 (English summary, p. 115). "A discipline grows exponentially when new discoveries and theories are made the point of departure for further discoveries and theories." Several sciences are considered (not mathematics), and an often stated 15-year "doubling time" is doubted. Any exponential growth law must be carefully formulated. (L. F. Meyers) #1843.

SWERDLOW N M 1981 Translating Copernicus. Isis 72, 73-82. Comparisons of translations of De revolutionibus into English by C. G. Wallis (1952), A. M. Duncan (1976), and Edward Rosen (1978), and into German by C. L. Menzzer (1879, reprinted 1939). (L. F. Meyers) #1844

TARINĂ MARIAN 1979 Development of GEOMETRY in the period of the French Revolution. (Romanian.) Gazeta de Matemática. (Bucharest) 84, 407-409. (ACL) #1845

TEE GARRY J 1981 The pioneering women mathematicians. Mathematical Chronicle 10, 31-56. Illustrated account of HYPATIA, DU CHÂTELET, AGNESI, GERMAIN, SOMERVILLE, and ADA AUGUSTA. (G. J. Tee) #1846

TEE GARRY J 1981 Euclid's Elements of Geometry. (In Arabic.) Australasian Association for the History, Philosophy and Social Studies of Science News and Information 6, 12. An incomplete manuscript of EUCLID's Elements, in the Arabic version by ISḤĀQ

IBN ḤUNAYN and THABIT IBN QURRA, now at the University of Otago, had been presented in 922 A.H. (c A.D. 1516) to the Sultan of Turkey, Suleiman the Magnificent. (G. J. Tee) #1847

TIJDEMAN R 1981 Solvability of DIOPHANTINE EQUATIONS. Nieuw Archief voor Wiskunde (3) 29, 36-49. A historical summary of certain Diophantine equations and methods used to solve them, prove them solvable (or unsolvable) or effectively (un)solvable, from ARCHIMEDES through MATIYASEVICH. NUMBER THEORY. (L. F. Meyers) #1848

TOBIES R 1981 IV. Tagung der Fachsektion Geschichte, Philosophie und Grundlagen der Mathematik der Mathematischen Gesellschaft der DDR. HM 8, 358-360. (ACL) #1849

TOBIES RENATE 1979 Zur wissenschaftsorganisatorischen Tätigkeit von FELIX KLEIN (1849-1925) im Rahmen der Breslauer Unterrichtskommission. NTM Schriftenreihe für Geschichte Naturwissenschaften Technik und Medizin 16, 50-63. (ACL) #1850

TOTH IMRE 1979 Spekulationen über die Möglichkeit eines nicht euklidischen Raumes vor Einstein. Pp. 46-83 in Einstein Symposion, Berlin (Berlin: Springer-Verlag; Lecture Notes in Physics, No. 100). NON-EUCLIDEAN GEOMETRY. (ACL) #1851

TROELSTRA A S 1981 Arend HEYTING and his contribution to INTUITIONISM. Nieuw Archief voor Wiskunde (3) 29, 1-23. A clear BIOGRAPHY and summary of his work, which was (in viewpoint) intermediate between that of his teachers L. E. J. BROUWER and G. MANNOURY. MATHEMATICAL LOGIC. (L. F. Meyers) #1852

TURNER STEVEN 1981 Epistemological and Social Problems of the Development of the Sciences in the Early 19th Century. HM 8, 355-357. Report of meeting at Bielefeld, 1979. (ACL) #1853

VACOV D K 1979 The earliest MATHEMATICAL JOURNALS. (Bulgarian.) B"lgarska Akademija na Naukite Fizičeski Institut Matematičeski Institut Fiziko-Matematičesko Spisanie 22 (55), 258-267. (ACL) #1854

WESTFALL RICHARD S 1981 Never at Rest: A Biography of ISAAC NEWTON. New York/Cambridge/London: Cambridge Univ. Press. xviii + 908 pp. Illustrated. $49.50. ISBN-0-521-23143-4. Though intended primarily as a "scientific" biography, all aspects of Newton's life and work are treated; including his early alchemical work and heretical theological views, his years at the Mint, and his presidency of the Royal Society. The author states that "one of the features of my biography which sets it apart from earlier ones, is the chronological account of Newton's mathematical activity." (ACL) #1855

WILDER RAYMOND L 1981 Mathematics as a cultural system. Oxford et al.: Pergamon. xii + 182 pp. $23.00. (Foundations and Philosophy of Science and Technology Series.) "Describes the nature of mathematics and its relations to society from the standpoint of cultural anthropology." The author intends this as a "more mature treatment" than his Evolution of Mathematical Concepts (first published, 1968) "in that citations to mathematical theory are not restricted to number and geometry" and his concepts of hereditary stress and consolidation are related more closely to mathematical developments. (ACL) #1856

WILLIAMSON FRANK 1980 RICHARD COURANT and the FINITE ELEMENT METHOD: A further look. HM 7, 369-378. (ACL) #1857

WONG GRACE 1981 She loves old maths. The Straits Times (Singapore), 12 January. Newspaper article, in English and Chinese, about LAM LAY YONG and her work on ANCIENT CHINESE MATHEMATICS. (G. J. Tee) #1858

WUSTMANN FELIX 1979 Zwei unbekannte Briefe von F. W. BESSEL in der Universitätsbibliothek Leipzig. NTM Schriftenreihe für Geschichte Naturwissenschaften Technik und Medizin 16, 64-69. (ACL) #1859

YADEGARI MOHAMMAD 1980 The BINOMIAL THEOREM: A widespread concept in medieval ISLAMIC MATHEMATICS. HM 7, 401-406. (ACL) #1860

ZAHAR ELIE G 1979 The mathematical origins of GENERAL RELATIVITY and of unified field theories. Pp. 370-396 in Einstein Symposion, Berlin (Berlin: Springer-Verlag; Lecture Notes in Physics, No. 100). (ACL) #1861